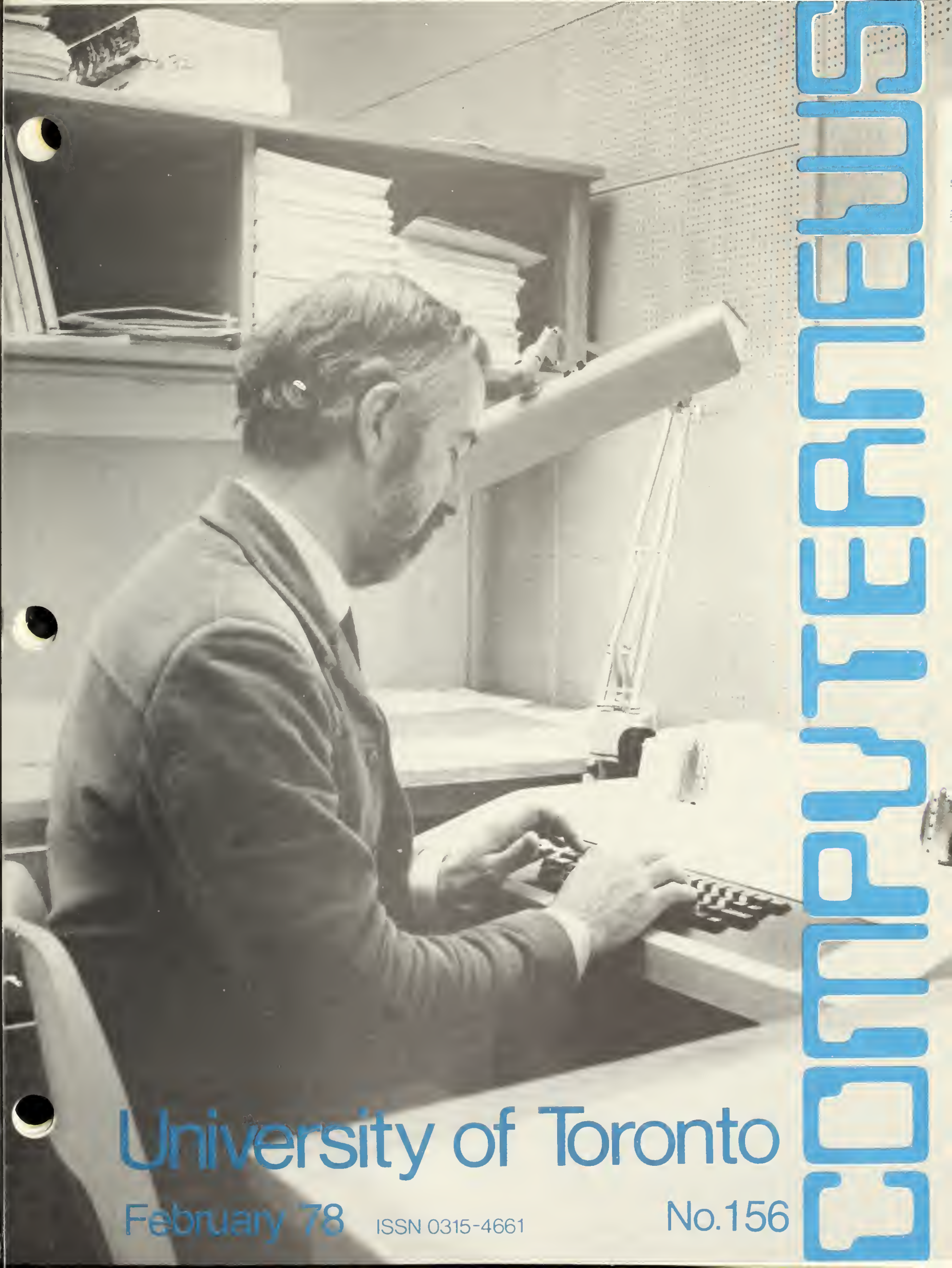




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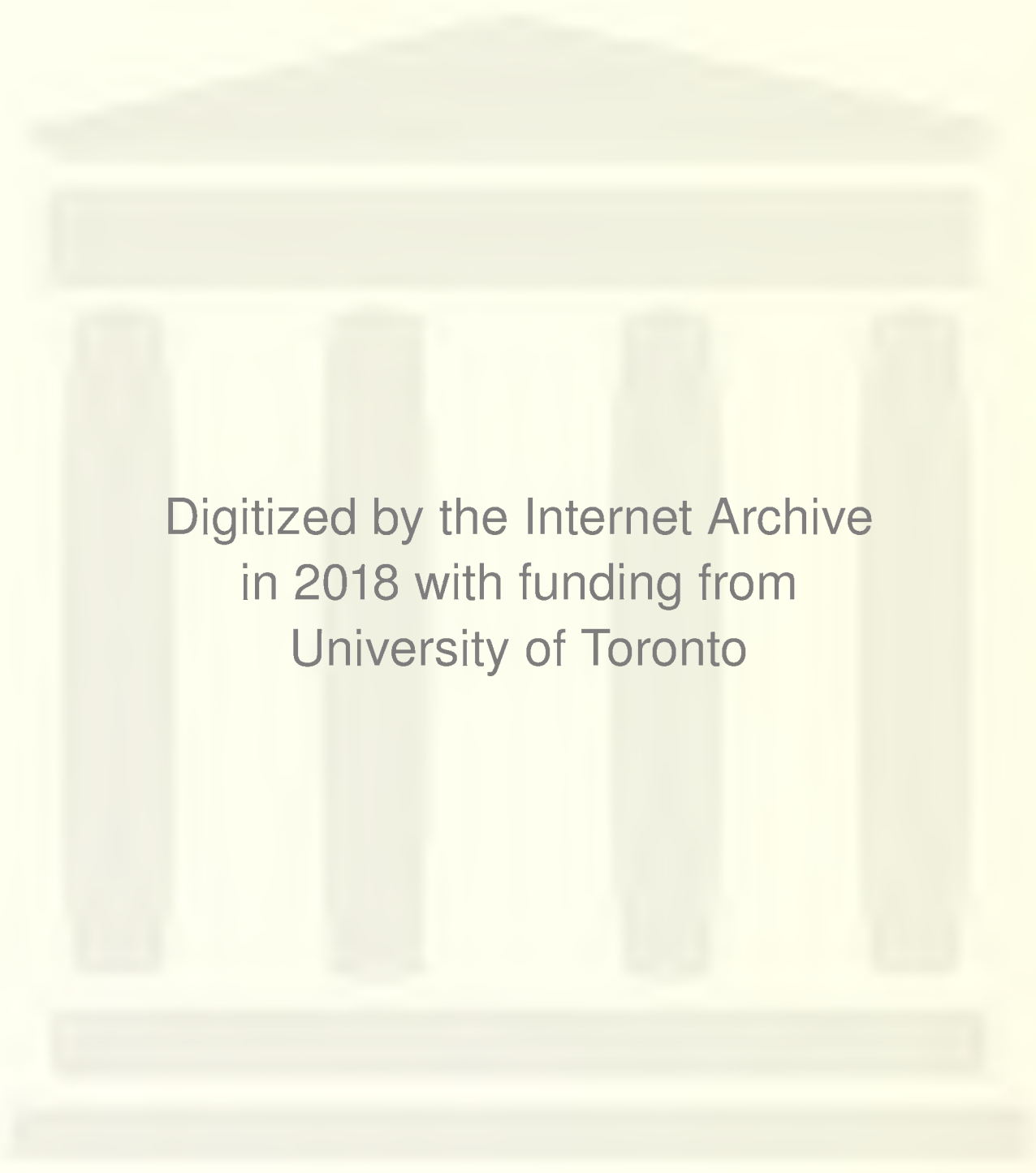
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COMPUTER ASSISTED INSTRUCTION (CAI)  
AT TRINITY COLLEGE

The cover of this issue of COMPUTERNEWS features Reverend J.C. Hurd using Computer Assisted Instruction (CAI) at Trinity College. Professor Hurd was one of the first users of CAI on this campus. For five years now, Prof. Hurd has been using CAI to help teach Introductory Greek to students at Trinity College.

Professor Hurd first became interested in the possibilities of Computer Aided Instruction after taking a graduate course offered by the Department of Computer Science, called the Use of Computers in the Humanities. The language that was used in that course was SNOBOL, an extremely powerful string-manipulation language. Unfortunately, the SNOBOL compiler was relatively slow and expensive and it wasn't until the introduction of the SPITBOL compiler that CAI became economically feasible.

Through the initial promotion of APL by UTCC, Professor Hurd started to realize the potentials of an interactive computer system in teaching the Greek language in his introductory course. He soon realized that, although it would be impractical to attempt to teach an entire language, the amount that a first year student might be expected to know could be feasibly implemented. Because of workspace limitations in APL, it turned out that only file manipulation functions could be stored in the workspace while the information would have to be stored in main files.

Four years ago, Prof. Hurd started with a simple system to teach the Greek alphabet. For this purpose, he wrote APL programs to be accessed through an IBM 2741 terminal using a Greek typeball. Since that time, the programs have evolved and grown until currently they include three distinct types of lessons. Two DECwriter terminals, programmed for the Greek character set, now replace the 2741.

The first of the lessons is an introduction to the use of the terminal. This is the simple type of interactive lesson that typifies most CAI sessions. The student signs on, responds to prompts, and works through to the end of the lesson. The session takes about 20 minutes.

The second type is the Greek alphabet lesson. In this lesson, the student can exercise more control. The student practises the alphabet in the familiar response-type mode. In addition, the student can exit from the drill or issue systems commands which give the student his score in the lesson and his grades in the course to date.

The third type of lesson is the most sophisticated. In this type of lesson the students can take the initiative in working with a text. The entire Fourth Gospel (John's) is on file and students can ask about words in this text. They can ask to see the paradigm (a list of inflected forms of the word), the grammatical identification, what part of speech the word is, and the dictionary form of the word. As well, they can have the definition of the word printed.

cont'd...

COMPUTER ASSISTED INSTRUCTION cont'dCAI - THE STUDENT VIEW

Alternatively, the student can let the system take the initiative. In this case, the student is given a word; the system asks what part of speech the word is, and, on the basis of the answer, it asks the student to type in the dictionary form of the word.

A log file is kept of the student's sessions and this allows Prof. Hurd to see where students are having difficulties. As well, it allows him to see any gaps or discrepancies in the programs. This allows a great deal of flexibility in order to improve the system.

There are presently fifty-seven students using the system during the school year. Unfortunately, due to connect time expenses, a student's use of the system is limited to one hour a week. As well, since there are only two terminals available, students must be scheduled into particular time slots which are occasionally inconvenient for the students. An increase of funds available would allow Prof. Hurd to use his system much more effectively. As it is, Prof. Hurd estimates that the system allows the student to cover a year and a half worth of course material in one year.

Prof. Hurd believes that the best applications for CAI are those which use the resources of the computer in a really effective way. He sees the types of systems which present text to a student in a relatively unsophisticated way as largely being a misuse of time and money (based on current computing costs). Clearly, his system is an excellent model of what a CAI system should be.

In order to evaluate student reaction to CAI, Professor Hurd's class (Introduction to New Testament Greek) was asked to complete a survey. The following is a compilation of the findings.

In Professor Hurd's class, CAI sessions serve a purpose similar to that of tutorials. In this particular case, CAI is primarily used to review class material. Considering the nature of the course (that is, the study of a non-verbal language), CAI provides an effective study aid, as a frequent review of vocabulary, grammatical rules, etc. is essential to the learning of a language. In Professor Hurd's class, CAI is also used to introduce new material.

Professor Hurd's students were asked what the initial response was to the idea of using a computer in what is normally considered a non-computer discipline. The students' opinions varied considerably. The majority of the class was favourable to the idea of using interactive computing as a teaching aid. Within this group, reactions ranged from mild interest to enthusiasm. The remainder of the class was composed of students who were either indifferent or opposed to the use of CAI as a means of instruction. The unfavourable opinions seemed to have root in a basic fear of computers. That is, these students were afraid of being unable to understand and/or operate the equipment. As well, several students had doubts as to the value of this new teaching aid.

cont'd...

CAI - THE STUDENT VIEW cont'd

It was later discovered that, in general, the fears of the students concerning the equipment were unfounded and a minimum amount of difficulty was encountered in learning how to operate the equipment associated with CAI.

To familiarize the students with CAI, the students were given an orientation session explaining the purpose of CAI in the course. However, several students voiced the complaint that the orientation session was too short and limited in scope. Student opinion held that the provision of a manual outlining how to use the equipment and listing the commands required for effective CAI use would have facilitated the use of the equipment. As well, the students felt that a machine demonstration would have proven beneficial. However, the majority of students conceded that instructor assistance was readily available.

While it was generally agreed that adequate machine time was available, a few students commented that the terminals could have been more conveniently located and that a certain amount of time was wasted due to terminal malfunctions and system problems.

When the students were asked what they considered the most frustrating or difficult aspects of CAI, numerous opinions were received. Some students expressed a simple dislike of computers. Others found their limited knowledge of computing to be frustrating. The use of terminal typewriters proved a handicap for those students with limited typing skills.

Some students experienced further frustration when, prompted by an accidental typing error, the computer responded with long and unnecessary instructions. A frequent complaint concerned the precise nature of the response required by the computer. That is, anything less than an exactly correct answer was unacceptable. An additional complaint concerned the fact that problem solutions were given too rapidly, thereby allowing the student insufficient time to formulate his own response. As well, difficulties were encountered in maintaining comparable levels of information covered in the classroom situation and in CAI.

The majority of students expressed the unqualified opinion that CAI is a useful learning tool. The remaining students felt that CAI had the potential to be a valuable learning tool but had not proved particularly effective in their personal situation and that CAI was valuable as a supplementary aid rather than as a sole means of course instruction.

Students were asked to rate CAI with respect to more traditional teaching aids, such as language labs, tutorial sessions, etc. Several students felt that CAI was a more valuable means of instruction than traditional methods of teaching. A small minority stated that they preferred the tutorial/language lab environment. The general feeling was one of approval, although some reservations were felt in the case of students experiencing difficulties in learning the course material; in the latter instance traditional teaching methods were preferred.

cont'd...

CAI - THE STUDENT VIEW cont'd

Although several students felt that CAI offered no advantage over the conventional lecture session, several students presented supportive opinions of CAI. These opinions concerned such benefits as the ability of the student to concentrate on areas in which he is weak without impeding the progress of the rest of the class; the availability of information which the student might feel embarrassed to ask for in a classroom situation; the accessibility of complete, concise information; and the non-pressured atmosphere of a computing environment.

Students voiced certain disadvantages of CAI over a conventional lecture session. One of the most common complaints concerned the lack of personal interaction. This was most strongly felt in the area of unusual problems which the computer could not solve whereas an instructor could. Others felt that CAI was ideal for the review situation rather than for a situation dealing with the introduction of new material.

When asked if they would like to see the use of CAI in more courses, the class showed an even division of opinion; one third said yes, one third said no, and one third was undecided.

The conclusion of the survey asked student opinion as to which courses would particularly benefit from the use of CAI. Aside from the expected answers (that is, Computer Science, Mathematics, and Engineering), the students offered several interesting suggestions. Students suggested that CAI could be used to teach any language and such subjects as history.

The overall consensus indicated by the survey was that CAI is an effective and valuable teaching aid.

Cathy Gillevet

OH MY GOSHSAID THE COMPUTER TO THE CHEMISTRY STUDENT

Editor's Note: The following article is reprinted from the January 16, 1978 issue of the Bulletin.

Computers may never replace teachers in the classroom, but Professor Jacques Deckers, Department of Chemistry at Erindale College, maintains that computer assisted teaching is a novel way to give every student in a large group the individual attention he needs.

"With perhaps 300 students in a lecture, how much time can a teacher spend with each of them? The computer, however, is a patient beast," says Prof. Deckers.

For the past five years Prof. Deckers and senior tutor, Judy Poe, have used computers in their problem solving tutorials for first and second year Erindale chemistry students.

A student, seated at an interactive terminal connected to the computer, is given a problem to solve, immediately or at his leisure, whichever he chooses.

cont'd...

OH MY GOSH

cont'd

When the student is ready, he feeds his answer into the computer and a print out provides instant analysis. The student is told if he is right or wrong (an incorrect answer can be greeted by 20 different responses including "Are you sure?" and "Oh my gosh.") and, depending on the sophistication of the program, the computer can in most cases respond to an incorrect answer by explaining to the student exactly where he went wrong.

Student opinion on the computer is about evenly divided, says Prof. Deckers.

"Half of them like it and the other half are turned off. Those who enjoy working with the computer like the immediacy of the answer and the others just don't like computers."

Besides the advantage of individual attention a computer can bring to the classroom, Prof. Deckers calls it an excellent task-master.

"If a student fails to solve a problem, the computer won't let him lose. It insists that he digest information on the spot and forces him to think. In a lecture or tutorial, it's easy for a student to become discouraged and daydream."

The professor believes the benefits of computer assisted teaching don't begin and end with the student, but interact with teaching methods as well.

"I've changed my whole teaching approach since I started using computers. Within a few seconds a computer often enables a teacher to find out where the student has gone wrong in his thinking, and, if a particular question has been answered incorrectly by the majority of students, the teacher can pinpoint where he himself has gone wrong."

Despite the important role computers can play in teaching, Prof. Deckers does not foresee self-obsolescence.

"For one thing, teaching exclusively by computer is just too expensive and, although a computer best handles quantitative aspects of problem-solving, it can't replace a lecturer presenting concepts to the student."

CAL

Computer Aided Learning (CAL) is simply an interactive learning facility which interfaces with the computer through a terminal (CRT or hardcopy).

The student is presented with tutorial or introductory text and is then asked a question. A correct response will advance him/her to the next question and an incorrect or invalid response will require a retry of the question. A further explanation of the question may be presented before a retry is attempted.

Although UTCC does not currently own any CAL packages, we are very interested in providing our user community with such a service.

cont'd...

CAL

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This could be accomplished in a number of ways - buying a package (UTCC is currently looking at CAL packages for the new DEC 1060 system); developing a package for a particular user; etc. (See the survey in this issue of COMPUTERNEWS and let us know if you are interested.)

Programming Services could write a very simple ten question, multiple-choice tutorial program on the IBM S/360-65 in as little as one day. As the tutorial becomes more sophisticated and documentation more involved, the development time will increase substantially.

Bob Blackburn

PUBLIC TERMINALS

As part of UTCC's effort to improve the time-sharing services offered to the user community, UTCC has obtained a number of terminals which will be made available for public use. In total, five replacement terminals and thirty-two new terminals have been ordered.

Engineering Annex

At the Engineering Annex, most of the older 2741 terminals have been moved into the high speed batch area in order to make room for the new terminals in the teletype terminal room. The new terminals include five hardcopy DECwriters and ten Volker-Craig Cathode Ray Tubes (CRTs).

The DECwriters are replacements for the terminals destroyed in last year's fire. At present, all five are dial-up terminals; this means that they may be used on any of UTCC's time-sharing systems. The Volker Craig terminals are all new additions to the public terminals presently available. They are all hardwired to the DEC 1060.

At present, both types of terminals have only standard character sets. However, both types are being upgraded so that they will be able to accommodate an APL character set.

Arts and Science

UTCC had planned to install seven new terminals (six Volker Craigs and one DECwriter) in the Sidney Smith building. However, because space is at a premium in Sidney Smith Hall, UTCC has been unable to acquire a room to house the terminals. The Faculty of Arts and Science has suggested that UTCC should consider placing the terminals in other nearby buildings. Although UTCC does not feel that this is the best alternative, it may be the only one available.

Erindale College

Erindale College has an additional five Volker Craig terminals in room 2045. This increases the total number of public terminals available to the Erindale community to fourteen. Of these fourteen terminals, eight are DECwriter terminals, with both standard and APL character sets, and six are CRTs. One of the CRTs has the APL character set with the overstrike feature.

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PUBLIC TERMINALS cont'dNew Physics

UTCC has purchased five terminals, two DECwriters and three Volker Craig terminals, which were housed in the Physics building. To date, only the Department of Geophysics has offered UTCC space to install some of the terminals. Unfortunately, only three terminals could be placed in the space provided and other conditions made the area unsuitable for a public terminal area. Although UTCC realizes that there is a shortage of space in the Physics building, we are still looking for a room to accommodate the terminals.

Scarborough College

The number of terminals available to the Scarborough community has more than doubled in the past month. Available are two DECwriter terminals (one with the APL character set), four Volker Craig terminals, and two 2741 terminals. By next September, the 2741 terminals will have been replaced with newer terminals. All of the above-mentioned terminals are located on the sixth floor in the Scarborough College Computer Centre.

Don Gibson  
Ralph Lombardi

P.S. ... P.S. ... P.S. ...  
MICROCOMPUTERS

The use of microcomputers is becoming widespread in a growing number of fields.

Von Neumann's digital computer provided the basic model for microcomputers. This model is composed of four major blocks: the memory, the arithmetic and logic unit (ALU), the control unit and the input/output (I/O) unit.

These units communicate with each other by transmitting signals or data over circuits forming a bus. Communication with the outside world is handled by the I/O unit via peripherals like teletypes, card readers, cassette drives, floppy disk drives, CRTs and paper tape punch/readers. The control unit together with the ALU is called the central processing unit (CPU). The CPU is the heart of the system. It retrieves and/or stores instructions or data from memory, decodes the instructions and executes the tasks.

These four units are integrated on chips through large scale integrated circuits (LSI). The whole system is called a microcomputer and the CPU chip is called a microprocessor. The number of chips varies depending on the function of the microcomputer. Today there are more than forty types of microprocessors on the market.

Microcomputers can have many applications. One of these is Computer Assisted Instruction (CAI). For CAI, a microcomputer would be programmed with a ROM (Read Only Memory) chip containing the course to be taught. Input and output could be supplied by a low speed terminal while cassettes or floppy disks could contain curriculum materials and record the progress of the student. Thus, using microcomputers and peripherals like cassette tape and floppy disks, a teaching machine with powerful logic and computational capabilities can be produced.

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P.S. ... MICROCOMPUTERS cont'd

With the introduction of sophisticated, inexpensive microcomputers, the use of computers has become more economically feasible. Due to their low cost and flexibility, the use of microcomputers is destined to become increasingly widespread.

Sandra Yen

THE 7TH ONTARIO UNIVERSITIES  
COMPUTING CONFERENCE

One of the central topics of the 7th Ontario Universities Computing Conference, held during June 1976, was the use of Computer Aided Instruction or Learning (CAI or CAL). Anyone interested in exploring the use of CAI would be well advised to examine the proceedings of this conference. A copy of the proceedings is available in the UTCC Information Office, Room 206, the Engineering Annex.

The following is a brief description of several of the papers presented at the conference.

"Cooperative Development of a Multi-Processor CAL network" - W.P. Oliver.

This paper is a discussion of the effort being made by many Ontario educational institutions to cooperatively develop a multi-processor CAL network. The paper explains the role of the Ontario Institute for Studies in Education (OISE) in this cooperative effort. The paper reviews CAL techniques ranging from the forerunner CAN-1 author language up to CANNET and CAN-7 author language.

"Multi-Media CAI at the University of Waterloo" - John B. Moore

This paper is an overview of the COMIT research project at the University of Waterloo. The prime objective of the COMIT project is to determine "the proper role of multi-media CAI in a University environment."

"Computerized English Language Training" - E.O.G. Davies

This paper reports on some of the problems and solutions encountered at Algonquin College in using CAL for English language training. The Computerized English Language Training (CELT) package is interesting in its application; that is, it is used to aid in understanding subject matter as opposed to memorizing it.

"WATCMI the Waterloo Computer Managed Instruction System" - John G. Wilson and Dr. Barry Willis

This paper, while reviewing the WATCMI system, examines the criteria to be considered in choosing or designing an author language.

It is hoped that these brief annotations will prompt users to further examine the various papers presented at the conference. Users interested in investigating the use of CAL will find these papers particularly useful in that several of the papers contain references to other CAL literature.

Don Gibson

THE FIRST YEAR AFTER THE FIRE

The effects of a fire are felt long after the last glow of the embers has died. The after-effects of the fire which occurred in the Sandford Fleming Building in February 1977 continue to impact the Computer Centre and its users even over a year later.

It is an appropriate time to review the events of the past year and to project the Computer Centre plans for the future.

Prior to the fire, plans were in place to consolidate all of the Computer Centre systems in the Sandford Fleming Building. In addition, the existing services were to be improved by the addition of a DECSys-10 for time-sharing.

The fire resulted in a change to these plans.

Engineering Undergraduate Terminal

The Engineering Undergraduate Terminal (EUT), which was located in the gutted out portion of the Sandford Fleming Building, was relocated within two weeks into its new home in the Engineering Annex. This move involved some technical problems since the length of channel cable to support the terminal in the Annex was beyond normal channel design specifications. A pair of channel extender boxes, which amplify the signals on the channel, were acquired to overcome this restriction.

Staff

Within a month, temporary quarters for staff were found on the second floor of the Annex and third floor of McLennan Laboratories. Some staff continued to work in machine room space until additional space was found on the third floor of the Burton Wing in October.

The S/370-155

The S/370-155, providing administrative services at 215 Huron Street, was heavily overloaded and required immediate replacement to cope with the fall registration of students. The S/370-155 was sold and replaced on July 1st by a S/370-158-3 as an interim solution to alleviate the capacity problem for our administrative users.

The Sandford Fleming Terminal

Immediately after the fire, the Sandford Fleming Terminal area was highly compressed, keypunches and typewriter terminals were moved into the Terminal I/O area, and other support functions, such as Advising and Information offices, were relocated in the Engineering Annex. The later move of the Sandford Fleming terminal to the ground floor of the Engineering Annex next to the Undergraduate Terminal had several benefits: some increase in space, consolidation of the Sandford Fleming terminal services, and room to install the DECSys-10 time-sharing system in the Sandford Fleming Building in the space vacated by the terminal.

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THE FIRST YEAR AFTER      cont'd

This combination of moves was not accomplished without some difficulties. Before the moves could be made, the new terminal area in the Annex had to be renovated to meet computer equipment standards by the installation of a raised floor, air conditioning, humidity control, and electrical power. As a result of unforeseen delays, the renovations scheduled to be completed by mid-September were not completed until early November.

Re-cabling of the Sandford Fleming Terminal equipment in the Annex involved even greater problems than those experienced in the Engineering Undergraduate Terminal move. The old but reliable SFT card readers would not function properly because of time delays introduced by further increasing the channel cable length in addition to the extended cable required to run EUT. It was decided that these readers would have to be replaced by new non-IBM buffered card readers which were not sensitive to time delays introduced by the increased cable length. However, in practice, the new card readers, although they overcame the problems of distance, proved to be highly unreliable mechanically. An old, reliable card reader was restored to service, operating on an independent channel attached by a cable well beyond channel design specifications.

The DECsystem-10

After the Sandford Fleming Terminal was moved to the Annex, work began in earnest to install the DECsystem-10. The DECsystem-10 system was operational by the end of January, 1978. Although a few loose ends still have to be tied up, the system load is already consistently running in excess of forty concurrent terminal sessions.

The Second Year After The Fire

The next year will see several major changes in the Computer Centre operations.

Consolidation in McLennan Laboratories

In February 1978, space was allocated to consolidate all Computer Centre systems on the third floor of the Undergraduate wing of the McLennan Laboratories. Approximately 10,000 square feet of space will be cleared and renovated to house the computer systems.

SA370-165-II

The new space in McLennan Labs will allow the computer systems to be moved out of the Burton Wing of the Sandford Fleming Building, hopefully before the demolition of the old Sandford Fleming Building begins.

The tentative plans call for this move to take place during the summer to minimize the effect of any disruption in service on our academic users. The move will not be a simple one. Aside from the large amount of work necessary to prepare the new site and to plan the physical move of equipment, we need to re-evaluate the equipment required to provide the Engineering

cont'd...

THE FIRST YEAR AFTER      cont'd

Annex Terminal and Engineering Undergraduate Terminal services.

S/370-158-3

The final phase of the consolidation will be the move of the Administrative computer system at 215 Huron Street to McLennan Laboratories in November or December after the workload resulting from student registration has dropped off.

To facilitate the staging of the computer system moves and to reduce long term equipment costs, a replacement for the S/370-158-3 Administrative system is being considered. The new system could be installed in McLennan Laboratories during the summer. The S/370-165-II Academic services could be moved to this new system before the actual physical move of the S/370-165-II takes place. In November or December, the Administrative services could be moved onto the new system or the S/370-165-II, and the S/370-158-II could be returned to IBM. The various options for a replacement system are before the Advisory Committee on Computer Facilities and Services and a recommendation is expected shortly.

DECsystem-10

Phase two of the DECsystem-10 installation is expected to be scheduled for this summer. Phase two calls for the upgrade from the KI10 processor (DEC 1060) to a KL10 processor (DEC 1090) with integrated input/output channels, and improved tape drives. The KL10 processor will more than double the

computing capacity of the DECsystem and will have the added capability of running the new TOPS20 operating system as well as the proven reliable TOPS10 system now in operation. However, no changes in DEC operating systems are planned in the near or medium term future.

The changes scheduled to take place in this second year after the fire will finally establish a base from which the Computer Centre can provide a stable and improved computing service for the years to come.

Rein Mikkor

DEC 1060 NEWS

Good news for users. Due to start up problems with our accounting system, DEC 1060 accounts were not available in early February. Therefore, the period during which free computing will be offered has been extended. UTCC will begin charging for DEC computing services on March 20, 1978 instead of March 1, 1978. This extra time will enable users to become acquainted with the DEC 1060 services without incurring charges.

Remember, however, that each user is responsible for closing accounts which are not to be charged after the free period. Users wishing to exclude unauthorized users can either close the account or change the password.

The RJE link as provided by DEC is now functional. For more details, see Computing Coordinators or use the DEC HELP file (HELP RJE370).

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DEC 1060 NEWS

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Other projects, such as session accounting, and a simplified PRINT command to allow users to print standard output at S/370-165-II remote batch terminals, are ongoing.

UTCC is now planning improvements to the DEC supplied link software. Users with suggestions to improve the service are asked to contact Stan Yagi (978-7331) or a Computing Co-ordinator.

Stan YagiMVS PROGRESS REPORT

In the November 1977 issue of COMPUTERNEWS, UTCC announced that Phase One development and testing of MVS 3.7 with JES 4.1 for the S/370-165-II would be completed after USER TEST 7. However, two major system reliability problems had prevented UTCC from moving into Phase Two.

Reliability Problems Solved

System wait states, loops, and started task abends were experienced in Tests 6, 7 and 8. Intensive investigation traced these problems to user jobs where tapes ran off the end of the reel while forward spacing. Common operational practice is to hit reset on the tape drive before the tape runs off the end of the reel.

The resulting equipment check on the tape drive induced a core overlay followed by a system crash. The problem has been corrected by the application of several Program Temporary Fixes supplied by IBM.

Numerous JES 2 Catastrophic Q01 abends were experienced during TEST 9 on JES2 Release 4.1G before UTCC fell back to 4.1F. These problems were caused by an error in the IBM distributed JES2 which was uncovered by the addition of HASP to HASP support in Release 4.1G. UTCC has developed and installed a local fix for this problem and has passed the fix to IBM.

MVS Phase Two

UTCC plans to announce the start of Phase Two in the near future following the successful completion of one or two more Phase One tests. Phase Two Tests will be scheduled during regular production hours, initially on weekends only.

Resource charging for Batch jobs, TSO sessions and GOULD plot output are already being displayed using approximate resource charging rates. These MVS rates will be finalized before users are actually charged.

The HASP-JES SPOOL TRANSFER PROGRAM will be used to transfer jobs from MVT to MVS and vice versa. The purpose of this transfer program is to minimize the disruption of UTCC's services (refer to the article, HASP JES2 SPOOL TRANSFER PROGRAM). Phase Two will be completed when full MVS charging has been implemented and all operational procedures and reporting functions are in place.

Walter Berndt

HASP JES2 SPOOL TRANSFER PROGRAM

The Computer Centre has acquired an IBM field developed program, the HASP JES2 SPOOL TRANSFER PROGRAM, which will enable UTCC to unload job queues on one HASP or JES2 system and subsequently reload them to the same or another HASP or JES2 system. This means that during Phase II of MVS testing (which initially will be carried out only on weekends) jobs in the queues will be transferred from the MVT operating system to the MVS operating system. Once tests have been completed, the remaining jobs as well as the unprinted and unpunched jobs will be transferred back to MVT.

Jobs awaiting execution are transferred in a straightforward manner, as the original card images are still available. Jobs awaiting print or punch, however, must be reconstructed due to restrictions upon direct entry into the print/punch queues. Thus, print lines are broken into card images which are submitted as a job which reconstructs the print lines during execution.

The SPOOL TRANSFER program attempts to resolve some minor JCL differences between HASP and JES2, including:

1. MVS SYSOUT=(A,INTRDR)  
is equivalent to MVT UNIT=INTRDR
2. MVS SYSOUT=\*  
is equivalent to MVT SYSOUT=msgclass
3. MVS SYSOUT=A,COPIES=2  
is equivalent to MVT SYSOUT=(A,2)

To prevent jobs from being transferred to another operating system, include the following comment card in the deck after the JOB card:

```
/*HJSTP JOBXFER={NO/NOHASP/NOJES}
```

=NO specifies that the job is not to be transferred under any circumstances.

=NOHASP specifies that the job is not to be transferred from MVS to MVT.

=NOJES specifies that the job is not to be transferred from MVT to MVS.

An attempt has been made to modify the SPOOL TRANSFER program so that it will be in accordance with all UTCC standards. If problems related to the transfer of jobs are encountered, please contact a computing co-ordinator or an advisor.

John Chapman

GRAPHICS OUTPUT AT YOUR TERMINAL

A preliminary release of UTCC's Terminal Graphics Software (TGS) has been installed to enable GOULD graphics output to be plotted under TSO at the user's terminal. The quality of the plot is dependent upon the capabilities of the terminal; in particular, the quality is influenced by the terminal's resolution characteristic. This new feature will be useful for tracing a graphic plot during debugging and producing a graphic plot at the user's site.

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GRAPHICS OUTPUT

cont'd

However, the plot cost will probably be higher than the cost of using the GOULD PLOTTER, as with the latter not all resource usage is charged.

Currently, versions for the XEROX DIABLO 1620 and the DEC VT52 are available. The resolution of 1/60 inch in the Y-axis and 1/48 inch in the X-axis on the DIABLO 1620 results in quite good graphic plots with good contrast. In fact, this high quality means that the plots produced by the DIABLO 1620 are used as final copies in some applications.

To invoke TGS for a plot on the DIABLO 1620, follow the procedure outlined below.

1. Direct the GOULD graphics output to a dataset, say 'USER.OWN.PLOT.DATA', instead of to the GOULD PLOTTER.
2. Then enter the following commands in TSO:  
 FREE FILE (FT05F001)  
 ALLOC FILE(FT05F001) DA('USER.OWN.PLOT.DATA')  
 CALL 'GOULD.TERMINAL.LMODS(XRX1620)'

TGS will work with most terminals having reverse linefeed as long as the terminal's control characteristics are fed into it. Applying this philosophy, a version for the DEC VT52 with very limited capabilities has been developed. This version is invoked by using the following:

CALL 'GOULD.TERMINAL.LMODS(DECVT52)'

TGS documentation will be published in USERBOOK. In the meantime, users requesting additional information concerning terminal graphics are asked to contact Kin Fong at 978-4924. The use of TGS is a step towards the achievement of an interactive graphics service, and, as such, responses from users would be greatly appreciated.

Kin Fong

DATA-TEXT 3.3

Release 3.3 of Data-Text was recently installed on the S/370-165-II. This was essentially a maintenance release, fixing most known bugs. As such, this change should not affect current Data-Text users. In particular, problems with the free-standing utilities have been fixed. The utilities now available are:

DTXTSPSS - to convert a Data-Text system file to an SPSS system file.

SPSSTDIX - to convert an SPSS system file to a Data-Text system file.

DTXSORT - to reorganize a Data-Text system file by giving it a new major structure.

DTXTRACT - to extract a 'subfile' of variables from a Data-Text system file.

cont'd...

DATA-TEXT 3.3

cont'd

SAS ENHANCEMENT

As free-standing utilities, they are run as separate jobs, not as part of a regular Data-Text run. Until USERBOOK 3.7 DATATEXT is updated, anyone wishing to obtain information on these utilities or on Data-Text itself should contact John Roth at 978-6878.

John RothSPSS USERS

Release 7.1 of the Maxi-version (up to 1000 variables) of SPSS has now been installed and can be accessed in the usual way as follows:

```
// EXEC SPSS,VERSION=M,CORE=240K
```

Release 5 has not been used for the past four months, and therefore has been removed from the system. Release 6.02 has been given its own catalogued procedure, SPSSV6. Those users who wish to use the older release for some reason, such as the different treatment of multiple SELECT IF statements, can still use release 6 as follows:

```
// EXEC SPSSV6
```

for the standard (H) version (up to 500 variables) or

```
// EXEC SPSSV6,VERSION=M,CORE=240K
```

for the release 6 Maxi-version. Any user having difficulty with this change or desiring more information should contact John Roth at 987-6878.

John Roth

The much promised proc CHART has finally arrived and has been installed as part of our SAS 76.5 system. This is a somewhat experimental procedure which will probably become part of the next release of SAS. Documentation for proc CHART can be obtained from the Information Office in the Engineering Annex either separately, or as part of the SAS Supplemental Library User's Guide. Any problems or suggestions should be directed to John Roth, the UTCC SAS Co-ordinator at 978-6878.

The CHART procedure produces four types of charts: vertical, horizontal, star and pie. Counts, percentages (individual cell and cumulative), means and sums can be charted automatically, with options for plotting charts side by side according to a grouping variable. Bars (or sectors) in the charts can be subdivided to show the contribution of various components to the total size. The data can also be divided into 'bins' automatically. See the above mentioned documentation for details.

John RothARTS AND SCIENCE COMPUTING CO-ORDINATOR

I am pleased to announce the appointment of Sue Chong as the Computing Co-ordinator at the Arts and Science Terminal (AST) and the Arts and Science Undergraduate Terminal (ASUT).

con'd...

ARTS AND SCIENCE

cont'd

Sue comes to us from the Health Care Research Unit, where she was responsible for questionnaire and survey formating, and subsequent statistical analysis. During the course of her previous job, Sue was a frequent user of the Arts and Science Terminal. As such, she brings a user point of view to her new position.

Sue's interest in computing stems from the work she did towards her Master's degree. During her residency, she completed various courses in applied statistics. These courses required the knowledge and use of several statistical packages. Her research interests in Mathematical Psychology led to the use of various computer programs dealing with scaling techniques.

Anyone having any questions concerning AST or ASUT may contact Sue Chong in Room 2100 in the Sidney Smith Building, or call 978-6509.

Ralph Lombardi

PERSONNEL CHANGES

I am sorry to announce that Andre LaBreche of Customer Services is leaving the Centre this month. We wish Andre the best of luck in his new position.

Clara Silva

RECENT ACQUISITIONS IN THE  
DEPARTMENT OF COMPUTER  
SCIENCE LIBRARY

American Society for Information Science.

Proceedings of the annual meeting  
no. 13 (1976)

Ames, William F.

Numerical methods for partial  
differential equations. 2d ed.  
New York, Academic Press, 1977.

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Management and evaluation of computer  
technology, ed. by J.I. Garcia.  
New York, ACM, 1973.

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Henrici, Peter.

Applied and computational complex  
analysis.

International Conference on Software  
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Proceedings.  
New York, IEEE, 1976.

International Conference on Very  
Large Data Bases, 2d, Brussels, 1976.

Systems for large data bases, ed.  
by P.C. Lockemann and E.J. Neuhold.  
Amsterdam, North-Holland, 1977.

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Inside information: computers in  
fiction.  
Reading, Mass., Addison-Wesley, 1977.

Reingold, Edward M., Nievergelt, J.  
and Deo, N.

Combinatorial algorithms: theory  
and practice.  
Englewood Cliffs, N.J., Prentice-Hall,  
1977.

Symposium on Foundations of Computer  
Science, 18th, Providence, R.I., 1977.

Foundations of computer science.  
New York, IEEE, 1977.

As you have probably noticed when reading this issue of COMPUTERNEWS, UTCC is interested in getting more involved in the application of CAI on this campus. Before we can get started, we have to identify what you, the customer, needs. Please fill in the survey and drop it into campus mail.

NAME: \_\_\_\_\_

DEPARTMENT: \_\_\_\_\_

PHONE: \_\_\_\_\_

1. Are you involved in using or developing a particular application now?

YES \_\_\_\_\_ NO \_\_\_\_\_

If yes, please fill out the following:

- a) Course \_\_\_\_\_  
b) Number of students \_\_\_\_\_  
c) Connect hours per student \_\_\_\_\_  
d) Total computer costs \_\_\_\_\_  
e) Terminals used: public \_\_\_\_\_  
other (specify) \_\_\_\_\_  
f) How was it acquired? (developed, purchased, etc.) \_\_\_\_\_

- g) How long did it take to implement? \_\_\_\_\_ months.  
h) Has there been improvements in student performance?

YES \_\_\_\_\_ NO \_\_\_\_\_

- i) What do you feel is the most serious obstacle to development of CAI on this campus? \_\_\_\_\_

- j) Brief description of application: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Are you interested in utilizing CAI in the future?

YES \_\_\_\_\_ NO \_\_\_\_\_

If yes,

3. a) Course \_\_\_\_\_  
b) Number of students \_\_\_\_\_  
c) Expected connect hours per student \_\_\_\_\_  
d) If you have looked at an existing package, please specify \_\_\_\_\_

e) Brief description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. What commitment do you expect from UTCC?

a) Increase terminal availability? YES \_\_\_\_\_ NO \_\_\_\_\_  
b) Programming support YES \_\_\_\_\_ NO \_\_\_\_\_  
c) Additional:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. If you would like someone from the Computer Centre to talk to  
you about your particular needs, please check here.

\_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

-----  
FOLD

FOLD

FOLD

University of Toronto  
Computer Centre  
49 St. George St.  
Toronto, Ontario  
M5S 1A1

ATTENTION: Bill Foster

## UTCC SYSTEMS

### SYSTEM/370 MODEL 165-II

- located in SF103/105/112
- provides General Purpose Job Stream, High Speed Job Stream, TSO, WYLBUR
- 4 megabytes of memory
- OS/MVT with HASP

### SYSTEM/360 MODEL 65

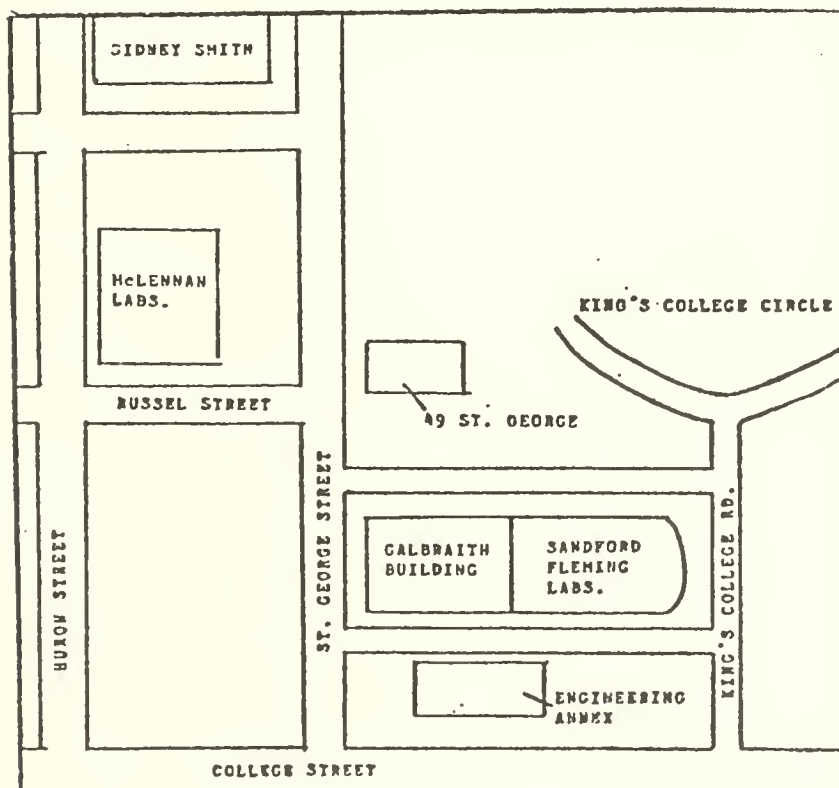
- located in McLennan Physical Laboratories
- provides APL and ATS services
- 1536K bytes of core
- OS/MVT with APL and ATS

### COMPUTER RESEARCH FACILITY

- located in SF207
- DEC GT44 System with PDP-11/40 CPU
- DEC GT40 System with PDP-11/05CPU
- provides specialized graphics and interactive graphics
- provides on-line and real-time computing services, data acquisition and minicomputer services

### DECSYSTEM 1060

- located in SF109/112
- provides General Purpose Time-Sharing
- 256k - 36 bit words of memory
- TOPS10 operating system



UTCC DIRECTORYACTING DIRECTOR

|             |       |      |
|-------------|-------|------|
| Rein Mikkor | NP351 | 5058 |
|-------------|-------|------|

INFORMATION OFFICE

|                   |       |      |
|-------------------|-------|------|
| General Inquiries | EA206 | 4990 |
| Marg Doherty      | EA206 | 8995 |

MANAGER, SERVICES

|           |       |      |
|-----------|-------|------|
| Stan Yagi | SG200 | 7331 |
|-----------|-------|------|

INFORMATION SERVICES

|            |       |      |
|------------|-------|------|
| Don Gibson | EA206 | 5568 |
|------------|-------|------|

SUPERVISOR, CUSTOMER SERVICES

|             |       |      |
|-------------|-------|------|
| Bill Foster | SG301 | 6021 |
|-------------|-------|------|

SUPERVISOR, PROGRAMMING SERVICES

|               |       |      |
|---------------|-------|------|
| Helen Peacock | SG201 | 6877 |
|---------------|-------|------|

SUPERVISOR, APPLICATIONS

|            |       |      |
|------------|-------|------|
| Herb Kugel | SG304 | 7286 |
|------------|-------|------|

SUPERVISOR, CO-ORDINATORS

|                |       |      |
|----------------|-------|------|
| Ralph Lombardi | SG305 | 7130 |
|----------------|-------|------|

COMPUTING CO-ORDINATORS

|                            |  |      |
|----------------------------|--|------|
| Engineering Annex Terminal |  |      |
| Time-Sharing Support       |  |      |
| TS Advisors                |  | 6465 |
| Mark Tapia                 |  | 7109 |
| Program Advisors           |  | 8599 |

|                |  |          |
|----------------|--|----------|
| Erindale       |  |          |
| Clem DiPlacido |  | 828-5311 |

|              |  |          |
|--------------|--|----------|
| Scarborough  |  |          |
| Ihor Prociuk |  | 284-3173 |

|                  |        |      |
|------------------|--------|------|
| Arts and Science |        |      |
| Sue Chong        | SS2104 | 6509 |

|              |        |      |
|--------------|--------|------|
| New Physics  |        |      |
| Bob Chambers | NP1201 | 8823 |

MANAGER, OPERATIONS

|           |       |      |
|-----------|-------|------|
| Derry Cox | EA206 | 7092 |
|-----------|-------|------|

SUPERVISORS, OPERATIONS

|                                   |       |      |
|-----------------------------------|-------|------|
| Paul Scarborough(DECYSYSTEM 1060) | SF103 | 6220 |
| Kam Jain (S/360-65)               | NP333 | 7374 |
| Dave Wong (S/370-158)             |       | 6864 |

MANAGER, SYSTEMS

|             |       |      |
|-------------|-------|------|
| Rein Mikkor | NP351 | 5058 |
|-------------|-------|------|

SYSTEM HARDWARE SUPERVISOR

|                 |       |      |
|-----------------|-------|------|
| Eugene Siciunas | EA206 | 4967 |
|-----------------|-------|------|

MANAGER, COMPUTER RESEARCH FACILITY

|              |       |      |
|--------------|-------|------|
| Dennis Smith | SF207 | 4086 |
|--------------|-------|------|

LAB CO-ORDINATOR (CRF)

|                 |       |      |
|-----------------|-------|------|
| Krishna Patnaik | SF207 | 4086 |
|-----------------|-------|------|

ACCOUNTS

|              |       |      |
|--------------|-------|------|
| Sylvia May   | EA206 | 7148 |
| Merton Hunte | EA206 | 8702 |

ACCESS CODES

|             |       |      |
|-------------|-------|------|
| Gail Cavers | EA206 | 8703 |
|-------------|-------|------|

MANAGER, INFORMATION SYSTEMS

|             |  |      |
|-------------|--|------|
| Sean Keeley |  | 3579 |
|-------------|--|------|

NOTE:

EA = Engineering Annex  
 SF = Sandford Fleming  
 SG = 49 St. George  
 NP = McLennan Physical (New Physics)  
 SS = Sydney Smith

JOB AND SYSTEM STATUS QUERIES

|                            |      |
|----------------------------|------|
| SYSTEM/370,TSO             | 7373 |
| ATS/APL                    | 6234 |
| 2741 TERMINAL MALFUNCTIONS | 7107 |
| 029 KEYPUNCH MALFUNCTIONS  | 6465 |

SERVICES

|                    | <u>DIAL-UP</u> | <u>ADVICE</u> |
|--------------------|----------------|---------------|
| APL - 2741         | 7200           | 6710          |
| APL(ASCII)         | 7200           | 6710          |
| ATS                | 7100           | 7107          |
| TSO - 2741         | 7303           | 8599          |
| TSO - TTY (10 cps) | 7390           | 8599          |
| TSO - TTY (30 cps) | 7386           | 8599          |
| DATATALK           | 6710           | 6710          |
| WYLBUR             | 7235(EBCDIC)   | 8599          |
|                    | 3950(ASCII)    |               |
|                    | CENTREX        |               |
|                    | 3954(ASCII)    |               |
|                    | NON CENTREX    |               |



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